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RESEARCH ON PASSIVE ORBITAL DISCONNECT STRUCTS OF CRYOGENIC TANK

Abstract

Cryogenic propellant is thought to be the most efficiency and economic chemical propellant in space access and transfer system. But the cryogenic storage has been a key point that restricts its development and application.

Reduction on the heat leak of cryogenic tank is an important approach to solve the problem of cryogenic storage. Because the heat leak through the connect support structure is one of the main routes on the whole system heat leak, the passive orbital disconnect struts(PODS) of cryogenic tank has been developed. Through the specific design, it make sure that the stucture could handle the high loads during the launch period and greatly reduces the heat leak in orbit by changing the heat transfer path. This paper summerized the development of PODS, especially in the aspects of structure design and materials.